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CHALLENGES IN TROPICAL ECOLOGY AND CONSERVATION - GLOBAL PERSPECTIVES

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COMPLEX TAXONOMY AND GLOBAL PHYLOGEOGRAPHY OF THE WELL-KNOWN TROPICAL EARTHWORM PONTOSCOLEX CORETHRURUS

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Few earthworm species are peregrine and among them, *Pontoscolex corethrurus* is the most well-known. Probably native from the Guyana shield, this earthworm is nowadays distributed worldwide, in the tropical and sub-tropical zones. It is found in a wide range of habitats, from apparently pristine to any kind of human-disturbed environments. *P. corethrurus* presents several characteristics of a successful invader: r-strategy, parthenogenesis reproduction and ecological and reproductive plasticity. Although its ecological interactions with the environment were well documented, the taxonomic status of this earthworm was unclear.

We investigated the phylogenetic relationships within the genus *Pontoscolex* at a global scale (25 countries), focusing on morphologically indistinguishable lineages using the mitochondrial COI and 16S markers, the nuclear ITS 2 and 28S markers and a large-scale multilocus sequence data matrix obtained using the Anchored Hybrid Enrichment (AHE) phylogenomic method.

Four cryptic species were discovered within the *P. corethrurus* species complex and one of them, *P. corethrurus* L_1 was particularly widespread. Although sympatry between L_1, L_3 and L_4 was observed, no case of hybridization was detected between L_1 and the two other cryptic species, confirming the status of species of *P. corethrurus* L_1. A population genetics study of this species using COI sequences and AFLP data revealed a low mitochondrial genetic diversity and a high proportion of clones in some populations, in accordance with the principal mode of reproduction of the species (i.e., parthenogenesis). However, variable levels of genetic diversity among populations and results of gametic disequilibrium analysis suggesting recombination in several populations, confirmed a mixed-mating strategy (sexual reproduction and parthenogenesis).